Evidence in PRM (PM&R)
Between Facts and Prejudice

Stefano Negrini

Chair of Physical and Rehabilitation Medicine
University of Brescia, Don Gnocchi Foundation
Director of Cochrane Rehabilitation
Disclosure

Director of Cochrane Rehabilitation
Chief-Editor of the European Journal of Physical and Rehabilitation Medicine (congress expenses)

ISICO (Italian Scientific Spine Institute): stock
Medtronic: consultant
Disclosure

I am not American
Disclosure

I am not American

Language mistakes

**PRM** for Physical and Rehabilitation Medicine
and not

**PM&R** for Physical Medicine & Rehabilitation
In PRM there is no EVIDENCE

A constant **boulder** on PRM shoulders
Overview

Evidence Based Medicine (EBM)
• The origin and reason for EBM
• Cochrane: the Gold Standard of EBM

Physical and Rehabilitation Medicine (PRM) and EBM
• PRM vs other medical specialties
• Problems with evidence generation in PRM
• State of research in PRM

Implementation of EBM in PRM
• Knowledge Translation
• Cochrane Rehabilitation

Some solutions for EBM in PRM
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Some solutions for EBM in PRM
Charles II, King of England and Scotland (1685)

He had a stroke and was treated by the best physicians
• 16 ounces bloodletting
• Not allowed to sleep making him sitting
• Glass cups on the shoulders
• Shoulders scarification for 8 ounces more of bloodletting
• Emetics and laxative at high dosage, with repeated clysters
• Shaven and stucked needles in the head
• White-hot cautery

Luckily the king died without awakening

The so-called tradition-based official medicine
Dr. Lind and scarvy (1747)

Scarvy: cause of death in sea explorations

Treatments mandated by Dr Lind advisors and paiers:
• Royal College of Physicians: sulfuric acid
• Admiralty: vinegar

The idea:
• 12 patients, same diet, 6 groups of 2
  – sulfuric acid,
  – vinegar,
  – cider,
  – sea water,
  – nutmeg,
  – 2 oranges and 1 lemon

First controlled study in history
Thalidomide (1961)

Drug for nausea during pregnancy
Proper studies were performed before marketing
First reports of phocomelias archived as “random events”
Reports increased, but the drug company did not disclose them until a scandal broke

Mandatory to collect data on adverse events and report to independent governmental agencies (like FDA)
Dr. Spock and Sudden Infant Death Syndrome

Renewed pediatrician, developer of a new educational model
Expert statement: “Do not let infants sleep on their back to avoid choking on the vomit and to avoid compression of the head always on the same side” (1956)

Studies about supine vs prone lying in infants:
• First small RCT (1965): no differences
• First serious RCT (1985): better supine
• Cochrane (2005): prone 4.15 (3.3-5.3) increased risk of SIDS

Importance of RCTs and metanalysis
«Official» Medicine today

- King Charles II
- Dr Lind
- Thalidomide
- Sudden Infant Death Syndrome

The methodology of “official medicine” comes from our history

Evidence Based Medicine

The explicit, conscientious, and judicious use of the current best evidence in making decisions about the care of individual patients (and populations)
Evidence Based Clinical Practice

The integration of
- best research evidence
- with clinical expertise
- and patient values

Growth of studies in PubMed

Number of papers per year in Medline from 1960 to 2015
Studies hierarchy

Levels of Evidence Pyramid

- Systematic Reviews
- Randomized Controlled Trials
- Cohort Studies
- Case-Control Studies
- Case Series, Case Reports
- Editorials, Expert Opinion
EBM is the last methodological achievement in the young history of medicine.
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Cochrane vision

A world of improved health where decisions about health and health care are informed by high-quality, relevant and up-to-date synthesized research evidence.
What does Cochrane do?

Cochrane gathers and summarizes the best evidence from research producing systematic reviews and meta-analysis including only Randomized Controlled Trials (RCTs).

Cochrane does not accept commercial or conflicted funding.

Why is Cochrane important? An example

A physiotherapist

Two very nice daughters with long, blond hair

Pediculosis – head lice got at school

They tried all known popular remedies, but no success

Last solution: totally cut their hair

Suddenly an IDEA – why not to try to check with Cochrane?
Problem solved

Cochrane Database of Systematic Reviews

Interventions for treating head lice

Johannes C van der Wouden, Tim Klootwijk, Laurence Le Cleach, Giao Do, Robert Vander Stichele, Arie Knuistingh Neven, Just AH Eekhof

First published: 5 October 2011
Editorial Group: Cochrane Infectious Diseases Group
DOI: 10.1002/14651858.CD009321 View/save citation
Cited by: 2 articles

Now he is the author of 2 systematic reviews in his field of competence
Patient reminders and recalls
Can they improve immunization rates?

Interventions to prevent hypothermia at birth in preterm and/or low birth weight infants
Emma M McCall, Fiona Alderdice, Henry L Halliday, Sunita Vohra, Linda Johnston
12 February 2018

Cochrane Interactive Learning
Cochrane is the actual gold standard for a good EBM approach
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Some solutions for EBM in PRM
ICF biopsychosocial model (WHO)
Classical medical specialties

Physical and Rehabilitation Medicine

## Core concepts of PRM

<table>
<thead>
<tr>
<th></th>
<th>Classical medicine</th>
<th>PRM specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall approach</strong></td>
<td>Disease oriented</td>
<td>Person/functioning oriented (holism)</td>
</tr>
<tr>
<td><strong>Diagnosis and prognosis</strong></td>
<td>Medical</td>
<td>Functional and medical</td>
</tr>
<tr>
<td><strong>Treatments</strong></td>
<td>One modality at a time</td>
<td>Multimodal</td>
</tr>
<tr>
<td><strong>Morbidities</strong></td>
<td>Single</td>
<td>Multiple</td>
</tr>
<tr>
<td><strong>Professional approach</strong></td>
<td>Individual</td>
<td>Multi-professional team</td>
</tr>
</tbody>
</table>
PRM has specific challenges for EBM that must be faced
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Some solutions for EBM in PRM
Research problems in PRM

Conception of the study
- Ethical Committee Approval
- Randomised Controlled Trials
- Quasi Randomised Controlled Trials
- Benchmarking Controlled Trials
- Registries and clinical databases
  - Community; Out-Inpatient
  - Primary; Secondary; Tertiary
  - Clinical; Research
  - Environmental factors

Setting
- Functional diagnosis
- Multimorbidity

Population
- Outcomes
- Rehabilitation process

Methods
Research problems in PRM

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Design

Setting

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32 possible biases in research

1. Bias in concepts
2. Definition bias
3. Bias in design
4. Bias in selection of subjects
5. Bias due to concomitant medication or concurrent disease
6. Instruction bias
7. Length bias
8. Bias in detection of cases
9. ‘Lead-time’ bias
10. Bias due to confounder
11. Contamination in controls
12. Berkson’s bias
13. Bias in ascertainment or assessment
14. Interviewer bias or observer bias
15. Instrument bias
16. Hawthorne effect
17. Recall bias
18. Response bias
19. Repeat testing bias
20. Mid-course bias
21. Self-improvement effect
22. Digit preference
23. Bias due to nonresponse
24. Attrition bias
25. Bias in handling outliers
26. Recording bias
27. Bias in analysis
28. Bias due to lack of power
29. Interpretation bias
30. Reporting bias
31. Bias in presentation of results
32. Publication bias
Frequent biases in PRM: 13/32

1. Bias in concepts
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Indrayan A. Basic Methods of Medical Research 3rd Ed. AITBS Publishers, Delhi
Random sequence generation
Allocation concealment
Selection
Allocation
Target Population
Blinding of participants, personnel
Blinding of outcome assessment
Performance
Intervention
Outcome assessment
Control
Incomplete outcome data
Detection
Attrition
Incomplete outcome data
Selective reporting
Reporting
Publication of study outcomes
Cumpston M. Introduction to writing a Cochrane Review
http://training.cochrane.org/resource/introduction-writing-cochrane-review
Research problems in PRM

Conception of the study
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Population
- Outcomes
- Rehabilitation process

Methods
Benchmarking Controlled Trials

An observational study aiming to provide non-biased estimates of differences in real-world circumstances due to:

• intervention(s)
• clinical pathways
• health care system(s)

among a well-defined group of patients.
Research problems in PRM

Conception of the study → Ethical Committee Approval
Design → Randomised Controlled Trials
Quasi Randomised Controlled Trials
Benchmarking Controlled Trials
Registries and clinical databases
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Clinical; Research
Environmental factors
Setting
Population → Functional diagnosis
Multimorbidity
Methods → Outcomes
Rehabilitation process
Rehabilitation process

Personal factors
• **Team:** multi-professional and interdisciplinary
• **Therapists’** competency and convincement
• **Patients’** convincement, compliance and adherence to treatment

Technical factors
• Low precision description (terminology and vocabulary)
• The Usual Therapy factor
• Multi-modal approach
Usual therapy (UT): the black box

Methods
• Systematic Review
• RCTs on rehabilitation for lower limb after stroke (2006-2016)

Results
• 86 papers (out of 1582)
• All treatments (13) checked only as «adjunctive» to UT
• 20 different treatments included in the UT groups
• Treatments in UT ranged from 1 treatment (19%) to 7 treatments (4%): mode 3 treatments (24%)
• 1 time 3 papers of 3 different groups had the same treatment (gait, gait training)
• 2 times 2 papers of 2 different groups had the same treatment
• 18 different adjectives and 18 different nouns used to define UT
• In 2 articles 3 different definitions used, in 7 articles 2 different definitions

Usual therapy (UT): the black hole

Methods
• Systematic Review
• RCTs on rehabilitation for lower limb after stroke (2006-2016)

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• In 2 articles 3 different definitions used, in 7 articles 2 different definitions
Multimodal approach

Different treatments provided together
Same treatments combined differently by different teams
Multimodal approach

Different treatments provided together
Treatments combined differently by different teams
Their combination gives the final result
Research problems in PRM

Conception of the study
- Ethical Committee Approval
  - Randomised Controlled Trials
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Design
- Setting
  - Population
- Methods
PRM research methodological problems requires better understanding
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Some solutions for EBM in PRM
Steady growth of research


<table>
<thead>
<tr>
<th>PRM</th>
<th>Population</th>
<th>2000</th>
<th>2011</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States PRM</td>
<td>Country</td>
<td>1.7%</td>
<td>1.6%</td>
<td>+111%</td>
</tr>
<tr>
<td>United Kingdom PRM</td>
<td>Country</td>
<td>1.9%</td>
<td>1.7%</td>
<td>+113%</td>
</tr>
<tr>
<td>Germany PRM</td>
<td>Country</td>
<td>1.7%</td>
<td>1.1%</td>
<td>+150%</td>
</tr>
<tr>
<td>Canada PRM</td>
<td>Country</td>
<td>2.5%</td>
<td>1.9%</td>
<td>+128%</td>
</tr>
<tr>
<td>Australia PRM</td>
<td>Country</td>
<td>3.4%</td>
<td>1.8%</td>
<td>+195%</td>
</tr>
<tr>
<td>Italy PRM</td>
<td>Country</td>
<td>1.9%</td>
<td>0.9%</td>
<td>+207%</td>
</tr>
<tr>
<td>Netherlands PRM</td>
<td>Country</td>
<td>2.8%</td>
<td>1.8%</td>
<td>+155%</td>
</tr>
<tr>
<td>Japan PRM</td>
<td>Country</td>
<td>0.8%</td>
<td>0.6%</td>
<td>+138%</td>
</tr>
<tr>
<td>Sweden PRM</td>
<td>Country</td>
<td>3.4%</td>
<td>2.5%</td>
<td>+135%</td>
</tr>
<tr>
<td>France PRM</td>
<td>Country</td>
<td>1.2%</td>
<td>0.9%</td>
<td>+132%</td>
</tr>
</tbody>
</table>
Growth of studies in PubMed

Number of papers per year in Medline from 1960 to 2015
Research interest in Rehabilitation is growing

Search: Rehabilitation [Mesh]
Source: www.gopubmed.org
Growth of type of studies in Rehabilitation

Search: Rehabilitation [Mesh]
Filters: Randomized Controlled Trial, Systematic Reviews, Meta-Analysis
Relative research interest: SRs
Relative research interest: RCTs

![Graph showing the relative research interest in PT modalities, Rehabilitation, and Drug Therapy over time.](image-url)
What is Rehabilitation [Mesh]?
What is Rehabilitation [Mesh]?

![Graph showing randomized controlled trials over time with different rehabilitation modalities highlighted.](image)

**Rehabilitation**
- Activities of Daily Living
- Animal Assisted Therapy
- Equine-Assisted Therapy
- Art Therapy
- Bibliotherapy
- Cardiac Rehabilitation
- Correction of Hearing Impairment
  - Communication Methods, Total
  - Lipreading
  - Manual Communication
- Dance Therapy
- Early Ambulation
- Exercise Therapy
  - Motion Therapy, Continuous Passive
  - Muscle Stretching Exercises
  - Plyometric Exercise
  - Resistance Training
- Music Therapy
- Neurological Rehabilitation
  - Stroke Rehabilitation
- Occupational Therapy
- Recreation Therapy
- Rehabilitation of Speech and Language Disorders
  - Language Therapy
  - Myofunctional Therapy
  - Speech Therapy
    - Speech, Ankyloglossia
    - Voice Training
- Rehabilitation, Vocational
- Telehabilitation
What is Rehabilitation [Mesh]?
Relative research interest: RCTs
PRM is comparatively producing a lot of good research (RCTs and SRs)
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Some solutions for EBM in PRM
The Know-Do Gap

High quality evidence is not consistently applied in practice\(^1\)

Examples in clinical practice:
- Statins decrease mortality and morbidity in post-stroke, but they are under-prescribed\(^2\)
- Antibiotics are overprescribed in children with upper respiratory tract symptoms\(^3\)

Examples in health system policies:
- Evidence was not frequently used by WHO\(^4\) (not true for last rehabilitation guidelines)
- Out of 8 policymaking processes in Canada\(^5\)
  - Only 1 was fully based on research
  - Other 3 were partially based on research

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Knowledge Translation

A dynamic and interactive process that includes the synthesis, dissemination, exchange, and ethically sound application of knowledge to improve health, provide more effective health services and products, and strengthen the health care system.

Canadian Institute of Health Research¹

Dissemination and implementation, implementation science, research use, knowledge transfer and uptake/exchange²

Different audiences

- **Consumers and the public**
  Those seeking health care, their families and carers, and the public

- **Practitioners**
  of health care including clinicians and public health practitioners

- **Policy-makers & healthcare managers**
  making decisions about health policy within all levels of management

- **Researchers & Research Funders**
  who need information regarding important gaps in the evidence
When Evidence is known, a Knowledge Translation effort is required.
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Cochrane Organization

**Review Groups**: systematic reviews

**Methods Groups**: development of methods for reviews

**Centres**: local knowledge translation

**Fields and Networks**: knowledge translation for a specific health community other than a condition
# 56 Cochrane Review Groups

<table>
<thead>
<tr>
<th>No.</th>
<th>Group Name</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Acute Respiratory Infections Group</td>
</tr>
<tr>
<td>2.</td>
<td>Airways Group</td>
</tr>
<tr>
<td>3.</td>
<td>Anaesthesia, Critical and Emergency Care Group</td>
</tr>
<tr>
<td>4.</td>
<td>Back and Neck Group</td>
</tr>
<tr>
<td>5.</td>
<td>Bone, Joint and Muscle Trauma Group</td>
</tr>
<tr>
<td>6.</td>
<td>Breast Cancer Group</td>
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<tr>
<td>7.</td>
<td>Childhood Cancer Group</td>
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<tr>
<td>8.</td>
<td>Cochrane Response</td>
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<td>9.</td>
<td>Colorectal Cancer Group</td>
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<td>10.</td>
<td>Common Mental Disorders Group</td>
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<tr>
<td>11.</td>
<td>Consumers and Communication Group</td>
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<tr>
<td>12.</td>
<td>Covidence Review Group</td>
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<tr>
<td>13.</td>
<td>Cystic Fibrosis and Genetic Disorders Group</td>
</tr>
<tr>
<td>14.</td>
<td>Dementia and Cognitive Disorders Group</td>
</tr>
<tr>
<td>15.</td>
<td>Developmental, Psychosocial and Learning Problems Group</td>
</tr>
<tr>
<td>16.</td>
<td>Drugs and Alcohol Group</td>
</tr>
<tr>
<td>17.</td>
<td>Effective Practice and Organisation of Care Group</td>
</tr>
<tr>
<td>18.</td>
<td>ENT Group</td>
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<td>19.</td>
<td>Epilepsy Group</td>
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<tr>
<td>20.</td>
<td>Eyes and Vision Group</td>
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<td>21.</td>
<td>Fertility Regulation Group</td>
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<td>22.</td>
<td>Gynaecological, Neuro-oncology and Orphan Cancer Group</td>
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<td>23.</td>
<td>Gynaecology and Fertility Group</td>
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<td>24.</td>
<td>Haematological Malignancies Group</td>
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<tr>
<td>25.</td>
<td>Heart Group</td>
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<td>26.</td>
<td>Hepato-Biliary Group</td>
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<tr>
<td>27.</td>
<td>HIV/AIDS Group</td>
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<td>28.</td>
<td>Hypertension Group</td>
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<td>29.</td>
<td>IBD Group</td>
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<td>30.</td>
<td>Incontinence Group</td>
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<td>31.</td>
<td>Infectious Diseases Group</td>
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<tr>
<td>32.</td>
<td>Injuries Group</td>
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<tr>
<td>33.</td>
<td>Kidney and Transplant Group</td>
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<td>34.</td>
<td>Lung Cancer Group</td>
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<tr>
<td>35.</td>
<td>Metabolic and Endocrine Disorders Group</td>
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<td>36.</td>
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</tr>
<tr>
<td>37.</td>
<td>Movement Disorders Group</td>
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<tr>
<td>38.</td>
<td>Multiple Sclerosis and Rare Diseases of the CNS Group</td>
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<tr>
<td>39.</td>
<td>Musculoskeletal Group</td>
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<td>Neonatal Group</td>
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<td>41.</td>
<td>Neuromuscular Group</td>
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<td>42.</td>
<td>Oral Health Group</td>
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<tr>
<td>43.</td>
<td>Pain, Palliative and Supportive Care Group</td>
</tr>
<tr>
<td>44.</td>
<td>Pregnancy and Childbirth Group</td>
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<tr>
<td>45.</td>
<td>Public Health Group</td>
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<tr>
<td>46.</td>
<td>Schizophrenia Group</td>
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<tr>
<td>47.</td>
<td>Skin Group</td>
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<td>48.</td>
<td>STI Group</td>
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<td>49.</td>
<td>Stroke Group</td>
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<td>50.</td>
<td>Test CRG</td>
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<tr>
<td>51.</td>
<td>Tobacco Addiction Group</td>
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<tr>
<td>52.</td>
<td>Upper GI and Pancreatic Diseases Group</td>
</tr>
<tr>
<td>53.</td>
<td>Urology Group</td>
</tr>
<tr>
<td>54.</td>
<td>Vascular Group</td>
</tr>
<tr>
<td>55.</td>
<td>Work Group</td>
</tr>
<tr>
<td>56.</td>
<td>Wounds Group</td>
</tr>
</tbody>
</table>
4 with >20 reviews of PRM interest

1. Back and Neck
2. Bone, Joint and Muscle Trauma
3. Musculoskeletal
4. Stroke

28 with \( \geq 1 \) reviews of PRM interest

1. Acute Respiratory Infections
2. Airways
3. Back and Neck
4. Bone, Joint and Muscle Trauma
5. Breast Cancer
6. Cystic Fibrosis and Genetic Disorders
7. Dementia and Cognitive Improvement
8. Developmental, Psychosocial and Learning Problems
9. Ear Nose and Throat disorders
10. Eyes and Vision
11. Gynaecological, Neuro-oncology and Orphan Cancer
12. Gynaecology and Fertility
13. Heart
14. HIV/AIDS
15. Incontinence
16. Injuries
17. Kidney and Transplant
18. Lung Cancer
19. Movement Disorders
20. Multiple Sclerosis and Rare Diseases of the CNS
21. Musculoskeletal
22. Neonatal
23. Neuromuscular
24. Pain, Palliative and Supportive Care
25. Pregnancy and Childbirth
26. Stroke
27. Vascular
28. Wounds

Role of Cochrane Fields

a bridge

- facilitate work of Cochrane Review Groups
- ensure that Cochrane reviews are both relevant and accessible to their fellow specialists and consumers

Rehabilitation stakeholders side

Cochrane Groups side
Vision

All rehabilitation professionals can apply Evidence Based Clinical Practice

Decision makers will be able to take decisions according to the best and most appropriate evidence
Mission

Allow all rehabilitation professionals to combine the best available evidence as gathered by high quality Cochrane systematic reviews, with their own clinical expertise and the values of patients.

Improve the methods for evidence synthesis, to make them coherent with the needs of disabled people and daily clinical practice in rehabilitation.
The Executive Committee

1. Stefano Negrini, MD (Italy) – Director
2. Carlotte Kiekens, MD (Belgium) – Coordinator
3. Francesca Gimigliano, MD, PhD (Italy) – Communication Com
4. Frane Grubisic, MD (Croatia) – Publication Com
5. Tracey Howe, PT (United Kingdom) – Professional representative
6. Elena Ilieva, MD, PhD (Bulgaria) – Education Com
7. William Levack, PT, PhD (New Zealand) – Reviews Com
8. Antti Malmivaara (Finland) – Method Com
9. Thorsten Meyer, Psy, PhD (Germany) – Method Com
10. Aydan Oral, MD (Turkey) – Publication Com
11. Julia Patrick Engkasan, MD (Malaysia) – Education Com
12. Farooq Rathore, MD (Pakistan) – Reviews Com; LMIC representative
Advisory Board

3 Cochrane Groups
5 World Scientific Societies
4 Regional Scientific Societies
11 Scientific Journals
4 Experts
• China, Colombia, Switzerland, US
4 Representatives
• 2 LMIC, 2 rehab professionals
Contributors and Partners
Evidence

List of Cochrane reviews of rehabilitation interest.

By subtopic:
- Health Conditions (100)
  - Cardiac (3)
  - Gynaecology or Urology (1)
  - Mental Health (1)
  - Neurological (26)
  - Older Adults (>65 years) (16)
  - Oncology (3)
  - Orthopaedic or musculoskeletal (incl. pain conditions) (29)
  - Other (5)
  - Paediatrics (<18 years) (11)
Publications

Pre launch (2015-6)

Post launch
Publications

Pre launch (2015-6)

Post launch
Cochrane Rehabilitation


Issue 3 | December 2017

Cochrane Rehabilitation serves as a bridge between all the stakeholders in Rehabilitation and Cochrane.

The first year of Cochrane Rehabilitation

The Global Evidence Summit 2017

My experience as a PhD student at the Global Evidence Summit 2017

An African proverb says: “If you want to go fast, go alone; if you want to go far, go together”.

My name is Chiara and last year I started my PhD in Brescia (Italy) on Evidence Based Medicine, dedicating most of my time to Cochrane Rehabilitation. This year I attended for the first time a Global Evidence Summit.

Happy Holidays from Cochrane Rehabilitation!
Yoga for stroke rehabilitation

We are uncertain whether yoga improves quality of life, balance, gait, depression, anxiety and disability in stroke survivors. Whether or not yoga has any adverse effects is also uncertain.

Cochrane Review; two studies with 72 people comparing yoga vs waiting-list control in adults with stroke.

Cochrane Review by: Cochrane Stroke Group

rehabilitation.cochrane.org | @CochraneRehab | #CochraneEvidence http://bit.ly/2BR580B
Headquarter of Cochrane Rehabilitation in Italy

Rehabilitation Centre "E. Spalenza-Don Gnocchi", Largo Paolo VI, Rovato (Brescia), Italy

Email: cochrane.rehabilitation@gmail.com

Twitter: @CochraneRehab

Facebook: CochraneRehab
Call for Review Tagging activities of Cochrane Rehabilitation

Call for translators of Communication material of Cochrane Rehabilitation

Dear Cochrane Rehabilitation Community member,

We are now proceeding with the production and dissemination of materials on Cochrane and Cochrane Rehabilitation. In order to spread these contents to all people involved in the rehabilitation world we are looking for colleagues willing to collaborate with us in the translation activities. These will include for the moment mainly:

- Cochrane Rehabilitation Website
- Newsletters

If you are interested in collaborating more actively with Cochrane Rehabilitation, we invite you to answer to this email, attaching a short Curriculum Vitae (1 page maximum), and a statement about why you are interested in this activity, what is your experience and how you would like to perform the work. You should also state the language of translation.

Dear Cochrane Rehabilitation Community member,

Help wanted! The Cochrane Rehabilitation Review Committee is in the process of tagging all rehabilitation relevant reviews in the Cochrane database. The purpose of this work is to make these reviews more accessible to people involved in the work of rehabilitation. Eventually we may explore categorizing these reviews by intervention and outcome types, but to begin with, we first have to find them.

We are crowd sourcing the work of tagging reviews. We have set an online database where users can sign up to contribute to the work of tagging reviews. A minimum of two people from different professional backgrounds will tag each review, and differences of opinion in tagging will be resolved by the Cochrane Rehabilitation Review Committee. Reviews relevant to rehabilitation will appear on the Cochrane Rehabilitation website under our section on "Evidence."

What is involved?
To see the kind of work that is involved, check out our instruction video for Cochrane Review taggers, click here.

Who can be involved?
We are waiting input from rehabilitation experts who might be physicians, nurses, or allied health professionals.

How do I get involved?
Methodology Committee

A think tank to help solving problems of EBM in PRM

Already done:
• Two surveys on EBM problems in Rehabilitation
• One poster at the Global Evidence Summit
• First Cochrane Rehabilitation Corner paper in the European Journal of Physical and Rehabilitation Medicine (October 2017)

Yearly journal special issues and/or sections on methodology:
• First one in EJPRM after Catalyst 2-days Workshop before ISPRM Paris
Cochrane Rehabilitation e-book

“Live” e-book available for free in Internet to be constantly updated

- In collaboration with and funded by the European PRM Bodies

Titles, abstracts and plain language summaries for:

- clinicians
- PRM trainees, undergraduate medical students, rehabilitation professionals student
- policymakers, patients’ associations and other stakeholders

Identify unmet needs of evidence synthesis and activate correct prioritization for future work of Cochrane
Other initiatives

Lectures & Workshops

Students For Best Evidence – S4BE in Rehabilitation

Other educational activities under way – look at our website
Overview

Evidence Based Medicine (EBM)
• The origin and reason for EBM
• Cochrane: the Gold Standard of EBM

Physical and Rehabilitation Medicine (PRM) and EBM
• PRM vs other medical specialties
• Problems with evidence generation in PRM
• State of research in PRM

Implementation of EBM in PRM
• Knowledge Translation
• Cochrane Rehabilitation

Some solutions for EBM in PRM
What can we do to face these challenges?

There is a general «agreement» that PRM has low evidence
• We are struggling to produce sound (and meaningful) research
• In reality, we are not missing methodologically sound research (RCTs)
• But this good research does not relieve us: we still feel that we are missing evidence

Probably we are stuck by the RCT gold standard, that is not the best methodological approach due to the intrinsic limitation of PRM:
• Rehabilitation process
• Black box
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It’s time to think out of the box!
The Parachute Systematic Review of RCTs

Objectives. To determine whether parachutes are effective in preventing major trauma related to gravitational challenge.

Material and Methods. Design: Systematic review of RCTs. Data sources: Medline, Web of Science, Embase, and the Cochrane Library databases; appropriate internet sites and citation lists. Study selection: Studies showing the effects of using a parachute during free fall. Main outcome measure: Death or major trauma, defined as an injury severity score > 15.

Results. We were unable to identify any randomised controlled trials of parachute intervention.

Conclusions. As with many interventions intended to prevent ill health, the effectiveness of parachutes has not been subjected to rigorous evaluation by using randomised controlled trials.
The ethics of clinical research requires equipoise – a state of genuine uncertainty … regarding the comparative therapeutic merits of each arm in a trial…

• Individual level

• Expert medical community
What the consequences in PRM?

Let’s imagine gait rehabilitation for stroke

Is an RCT about making the patient walk like a parachute RCT?

Would an ethical committee consider unethical a control group without treatment?

• Yes!
• Rehabilitation in this topic has evidence without RCTs

What are not parachutes (ethical committees would allow the studies)?

• Who makes him walk?
• How he/she makes him walk?
• How we increase the recovery speed?
• How we reduce inherent costs?
1. Parachute Evidence Based Ethical List in PRM

What is this?
• A proposal to **systematically list all PRM treatments** that:
  – are like parachutes,
  – would be unethical to stop providing,
  – do not need any scientific study to prove their evidence

Methods
• **Consensus** procedures
• **Partners**
  – ISPRM
  – Cochrane
  – others

Limits
• **Conflict of interest** (?): but, who else if not us?
The Pyramid of Evidence
2. The Pyramids of Evidence in PRM

- RCTs
- QRCTs
- BCTs
- Cohort studies
- Case-Control studies
- Single Case studies

Task of Cochrane Rehabilitation
Take home messages

Evidence Based Medicine (EBM)
• EBM is the last methodological achievement of medicine
• Cochrane is the actual gold standard for a good EBM approach

Physical and Rehabilitation Medicine (PRM) and EBM
• PRM has specific challenges for EBM that must be faced
• PRM research methodological problems requires better understanding
• PRM is comparatively producing a lot of good research

Implementation of EBM in PRM
• When Evidence is known, a Knowledge Translation (KT) effort is required
• Cochrane Rehabilitation is the KT organization for PRM

PRM needs new out of the box thinking about the Evidence that we have, and how to generate future better Evidence
In PRM there is no EVIDENCE

A constant boulder on PRM shoulders
In PRM there is no EVIDENCE

Perhaps it is only a pebble in the shoe of PRM.
Thank you

stefano.negrini@unibs.it
@ProfNegrini
www.dongnocchi.it - www.unibs.it

cochrane.rehabilitation@gmail.com
@CochraneRehab
www.rehabilitation.cochrane.org

Trusted evidence.
Informed decisions.
Better health.